User Manual

Matrix Switching System

HDMI 4x4

HX-2344

V.2010HX2344.00

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Before You Begin

- Follow all instructions marked on the device during using.
- Do not attempt to maintain the device by yourself, any faults, please contact your vendor.
- Provide proper ventilation and air circulation and do not use near water.
- It is better to keep it in a dry environment.
- The system should be installed indoor only. Install either on a sturdy rack or desk in a well-ventilated place.
- Only using the power Adaptor supported with the device.
- Do not use liquid or aerosol cleaners to clean the device.
- Always unplug the power to the device before cleaning.
- Unplug the power cord during lightning or after a prolonged period of non-use to avoid damage to the equipment.

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1.0 Matrix System Overview

1.0.1 Introduction

The HX-2344 Matrix switcher is a high performance HDMI switching equipment combining with video and audio. It is used for input/output cross switching of image signals. It can also transmit images input separately to each mulit-output equipments, thereby minimizing signal attenuation and ensuring high definition, integrating high fidelity graphics and audio signal output.

The HX-2344 is used mainly in TV broadcasting projects, multi-media conference halls, and large display projects, TV teaching and command control centers. It boasts features of power interruption protection during power surge, LCD display and synchronous and integrate audio/visual switching functions. HX-2344 supports 4 HDMI Type A for input and output connectors. Beside it also supports a RS-232 communication port enables convenient communication with remote control equipment to switch the image signals.

Figure 1-1 HX-2344 Matrix

1.0.2 Packing

	HDMI Matrix Host
	RS-232 Communication Connecting Cable
	Adapter
	IR Extended Line
	Controller
	HDMI Matrix Software CD
	User Manual
	2 Rack-Mount Bracket
	6 Screws (for Brackets)

2.0 Host Installation

The HDMI Series Matrix Host has a black metallic housing. It can be placed on a sturdy desk directly or installed on a 19-in bracket. See Figure 2-1 below:

Figure 2-1 Mount the HDMI Matrix Host on a Standard Bracket

3.0 Specifications

Function	HX-2344
Input Connector	4 x HDMI Type A
Output Connector	4 x HDMI Type A
RS-232 Connector	DB9 Female
Select Switch	13
LCD Module	1
Max. Resolution	1080P
Highest TMDS Frequency	225 MHz
Cable Distance	10 meter (Max.)
Power Adapter (Min.)	DC 12V
Housing	Metal
Weight	2350 g
Dimensions (LxWxH)	440x185x42mm

4.0 Front/Rear Panels

4.0.1 Rear Panel

Figure 4-1 HX-2344 Front Panel

The Hx-2344 Matrix Switching System supports up to 4 Output/Input switching keys on the front Panel allow you to switch singal quickly.

Operation methods as follows:

“Output Channel” + “Input Channel”

- **OUT 1~4 keys** (output channel)**:** Indicate the Channel 1~Channel 4 for HDMI singal output to peripheral display. You can also use these keys to adjust the status or access the settings
- **IN 1~4 keys** (input channel)**:** Indicate the Channel 1~Channel 4 for HDMI singal input. You can use these keys to switch to the connection of the connected signal source channels.
- **IR1:** Infrared receiver.
- **All:** This key allows you to set single input channel to all output channels.
  - Press the **"All"** key.
  - Select the one of the IN 1~4 keys.
  - The selected **IN x** key will deliver the singal to all output channels.
  - You can also press the **"All"** key and then the **"OFF"** key to disable all the displayed switching settings.
- **OFF:** Disable the entire output channels. Press the one of the **OUT x** keys that you want to disable the output channel, then press the **OFF** key. You can also press the **"All"** button and then the **"OFF"** button to disable all the displayed switching settings.
- **STO:** The **"Store Key"** saves all current input/output corresponding relations.
  - Press the **"STO"** key.
  - Arrang the Output and Input channel combinations.
  - The relation between the Output and Input settings will be saved in the memory temporarily.
- **RCL:** The **"Retriever Key"** retrieves the saved input/output corresponding relations.
  - Press the **"RCL"** key.
  - Then press the previously saved output channel key
  - The system will retrieve the saved input/output status and implement current staus switching.
- **EDID: FIX** (fix mode) and **TV1** (access the first output channel) selection key.
  - **FIX mode:** The **HX-2344** will supply a set of fixed **EDID** values to support up to only 1080P high performance TV.
  - **TV1 mode:** The **HX-2344** will accecc the **EDID** values of high performance TV that connected to the first output channel, and copy the **EDID** value to all the input channels so that the DVD player can support to all the HDTV.
- **LCD:** LCD display shows current HDMI matrix status and operation status.

4.0.2 Rear Panel

Figure 4-2 HX-2344 Rear Panel

The HX-2344 supports up to 4 input/output jacks on the rear panel, each 4th row HDMI female terminals form the signal input/output jacks. The HX-2344 signal input/output terminal channels are numbered from right to left as No.1 to No.4 channels. The input terminal channels supply you to connect to different equipent including CD/DVD players, graphics workstations, and number displays. The output terminals can be connected to projectors, video recorders, displays and multiplexers and so on.

- **RS-232:** Use the **RS-232** connection cabel to connect the computer serial port (COM1 or COM2) to the **RS232** communication port of the HDMI matrix host. The computer can then be used to control the HDMI matrix after installation of application software. The RS-232 port is a 9-pin female connector.
- **DC 12V:** The Power is applicable for DC12V
- **IR2:** Connect to the IR Extended Receiver.
- **INPUT 1~4:** HDMI input Channels connected to the DVDs.
- **OUTPUT 1~4:** HDMI output Channels connected to the HDTVs.

HDMI Type A Connector pin definition:

Pin #	Signal
1	TMDS Data2+
2	TMDS Data2 Shield
3	TMDS Data2-
4	TMDS Data1+
5	TMDS Data1 Shield
6	TMDS Data1-
7	TMDS Data0+
8	TMDS Data0 Shield
9	TMDS Data0-
10	TMDS Clock+

Pin #	Signal
11	TMDS Clock Shield
12	TMDS Clock-
13	NC
14	NC
15	DDC-SCL
16	DDC-SDA
17	DDC-Ground
18	+5V Power
19	Hot Plug Detect

5.0 HDMI Matrix and Peripherals Connection

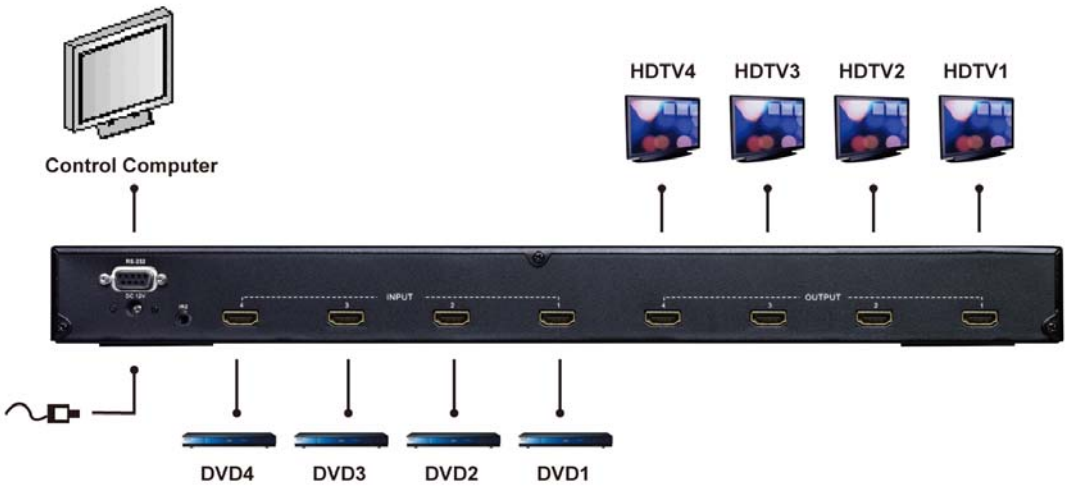


Figure 5-1 HDMI Matrix System Connections

5.0.1 Input/Output Connections

Use the HDMI connecting cable to connect the Input/Output serial port (No.1 ~ No.4) to the HDMI port of the DVD Player/HDTV.

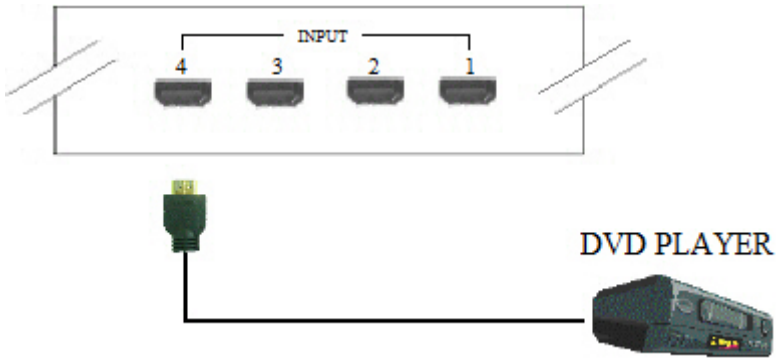


Figure 5-2 Input Connection

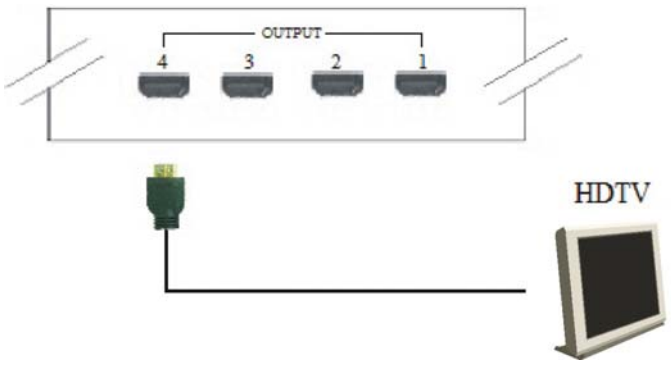


Figure 5-3 Output Connection

5.0.2 HDMI Matrix and Control Computer Connection

Use the RS-232 connecting cable to connect the computer serial port (COM1 or COM2) to the RS-232 communication port of the HDMI matrix host. The computer can then be used to control the HDMI matrix after installation of application software. Aside from using the front panel keys for switching operation, you are also permitted to use the RS-232 connection port for remote operation.

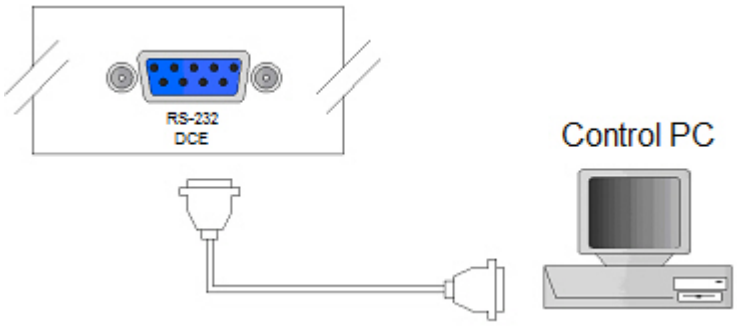


Figure 5-4 HDMI Matrix and Computer Connection

The Leg functions are described as below:

Pin No.	Leg	Description
1	N/u	Null
2	Tx	Send
3	Rx	Receive
4	N/u	Null
5	Gnd	Ground
6	N/u	Null
7	N/u	Null
8	N/u	Null
9	N/u	Null

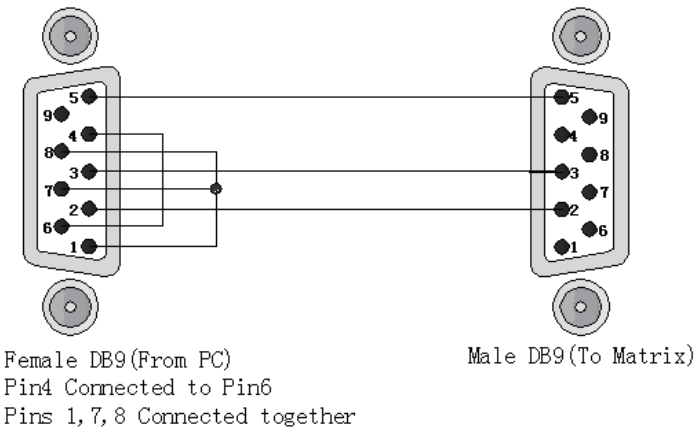


Figure 5-5

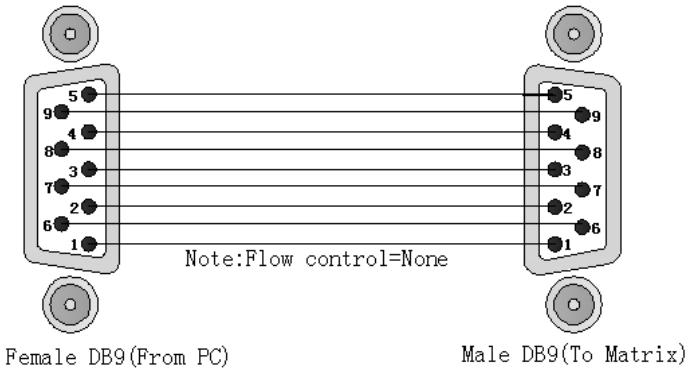


Figure 5-5 (a)

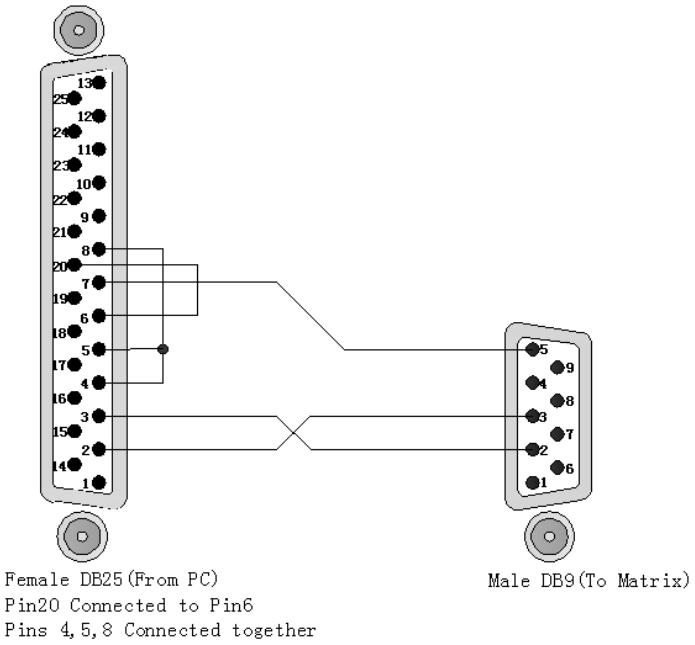


Figure 5-5 (b)

☞ The Matrix RS-232 port is defined as DCE.

5.0.3 IR2 Connection

The HDMI matrix provides you an IR Extended Line for more convenient to react to the controller. Please connect the IR Extended Line to the IR2 port that is on the rear panel.

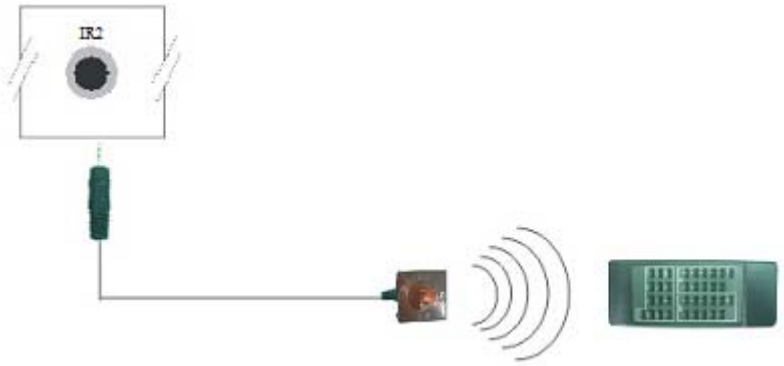


Figure 5-6 IR Connection

5.0.4 Power connection

Use the included adapter to connect from the power port on the rear panel of HDMI matrix host to the outlet.

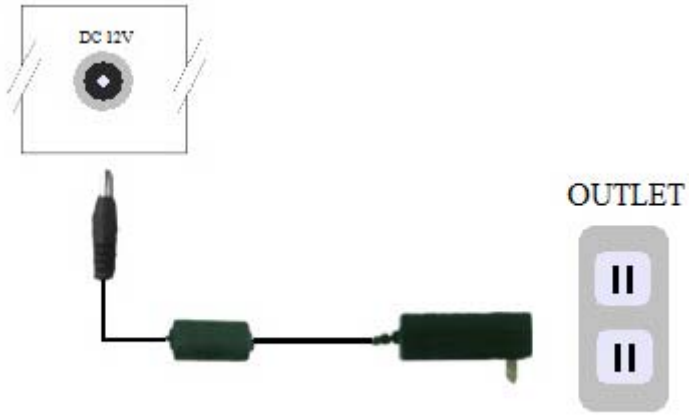


Figure 5-7 Power Connection

6.0 Matrix Application Software

6.0.1 Software Introduction

The 《AV Matrix》 Matrix control software applies to different input/output matrixes.

6.0.1.1 Software Description

The《AV Matrix》matrix testing software is an application tool developed for matrix testing and application. The software operation environment is as follows:

Window98/2000/NT/XP operatng systems
32M interal memory or above
10M hard disk space or above
CD-ROM
At least one serial communicatin port

6.0.1.2 Software Activation

First, you must power off both the HDMI matrix and the computer. Then, connect the matrix RS-232 port to the PC RS-232 port with the bundled communication cable. (Refer to the previous section **“HDMI Matrix and Control Computer Connection”.**

Power on the **HDMI** matrix and the computer:
Activate the **AV Matrix.exe** on the bundled CD-ROM in the control computer to enter the software configuration screen.

6.0.2 Software Features

The software controls signal connection between the corresponding input port and output port as required. The main configuration screen is as below:

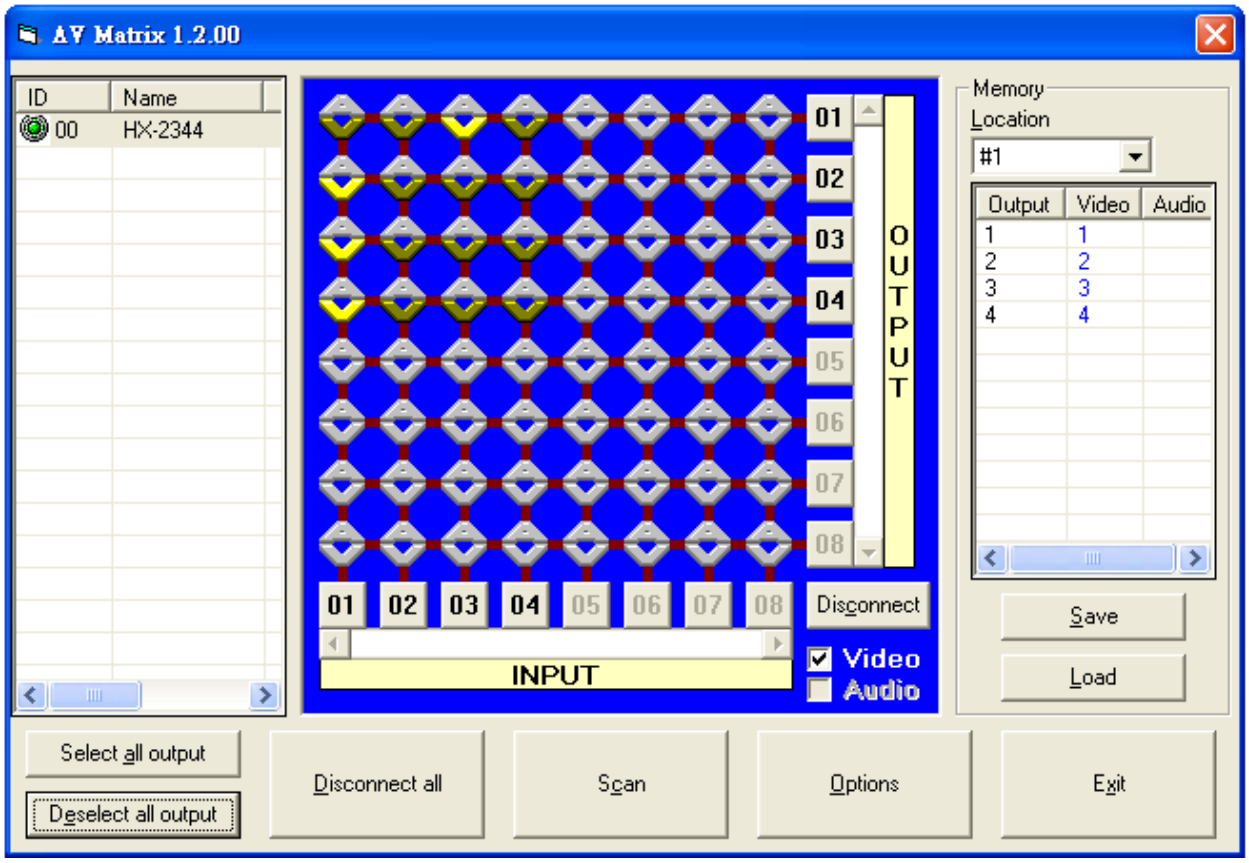
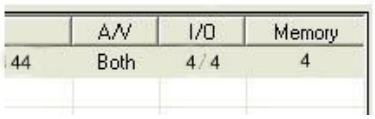


Figure 6-1 《AV Matrix》Software Configuration Screen

☞ HX-2344 is integrated Video/Audio switching equipment; please select the **Video** check box before you begin to operate the software.

Scroll on the left area of the main screen to view contents as shown below.



6.0.2.1 Main Operation Interface Functions

Refer to the main configuration screen as above, the marked blue area shows crossing matrix of output ports 01-04 and input ports 01-04. For the basic operation is described as below:

Examples for Selecting Matrix Switching Functions:
Example: Now there is an HX-2344 matrix having all the input/output ports properly connected to the equipment. If you want to set channel 1 input to channel 2, 3 and 4 output; channel 3 input to channel 1 output. There are 2 ways to implement the switching. Please follow the ways and steps to finish the switching functions:
First way: Make sure you have selected **"Video"** check box (

). Directly click on the corresponding icons on the matrix to transform them into to complete the switching operation.

Second way:

Step 1: Make sure you have selected **"Video"** check box (

).
Step 2: First select the **"Output"**number keys 02, 03 and 04 to the right of the blue configuration area, and select the **"Input"** number key 01 to the bottom. Then, press consecutively the previously selected **"Output"** number keys 02, 03 and 04 (or you can press the **"Deselect all output"** key). This way, you have selected **"Input"** 01 and **"Output"** 02, 03 and 04 switching.
Step 3: First select the **"Output"** number key 01 to the right of the blue configuration area, and select the **"Input"** number key 03 to the bottom. Then, press the previously selected **"Output"** number key 01 (or you can press the **"Deselect all output"** key). This way, you have selected Input 03 and Output 01 switching.

Upon completion of the above 3 steps, you have actually completed the switching operation of having channel 1 input to channel 2, 3 and 4 ouput while at the same time successfully switched from channel 3 input to channel 1 output.

The main configuration screen also show you some function buttons to easy operation:

Disconnect: To disable the connections. After you had configured the connection between input and output ports, you can click this button to disable the connections.
Select all output: Click this button to select all output ports including output 01~04.
Deselect all output: Click this button to cancel presently selected output ports. After you had configured a connected combination, please click this button firstly for next settings.
Disconnect all: To stop all the connections.

Scan: To refresh the values of the configuration screen. Any changed settings directly on the HX-2344 equipment will not respond to the AV Matrix operating interface, you have to click the **Scan** button to refresh the configuration screen so that showing the changed values.

Options: Allows you to configure the **Port number** and **Baud rate**.

Exit: Click this button to exit the configuration screen.

Save: Click this button to save the connected combinations both output ports and input ports.

Load: Click this button to retrieve the previously saved settings.

For more information and operations, please refer to next chapters.

6.0.2.2 Disconnect Function Keys

Disable all the unused output ports.

A specific example of operation is described as below:

The present input and output relations are shown in Figure 6-2 below:

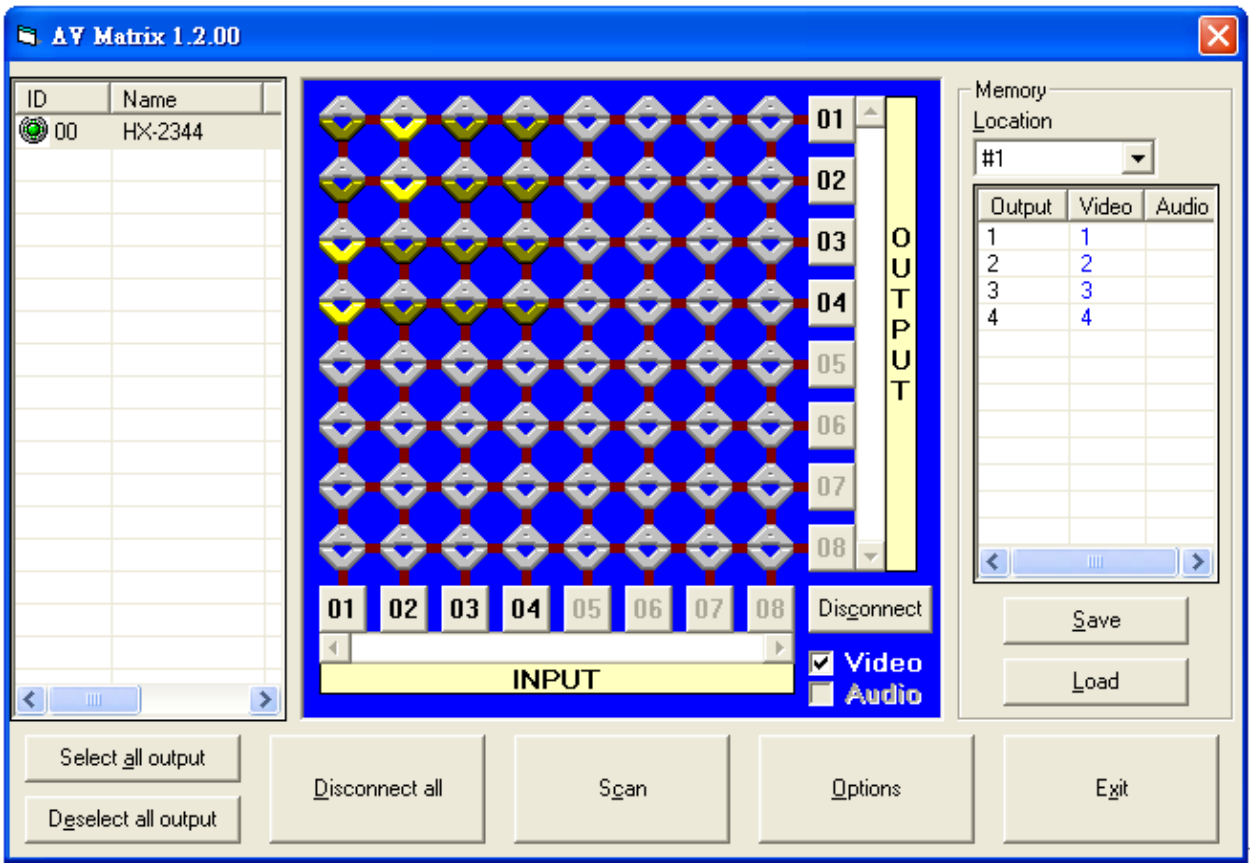


Figure 6-2

First you have to disable the output ports including port 03、02、and 01.

Step 1: First press down the output number keys 03, 02 and 01 to the right of the blue configuration area.

Step 2: Press the **"Disconnect"** key;

Step 3: Press the previously pressed output number keys 03, 02 and 01 (or press the **"Deselect all output"** key) to complete the operation.

The final results will be as shown in Figure 6-3 below:

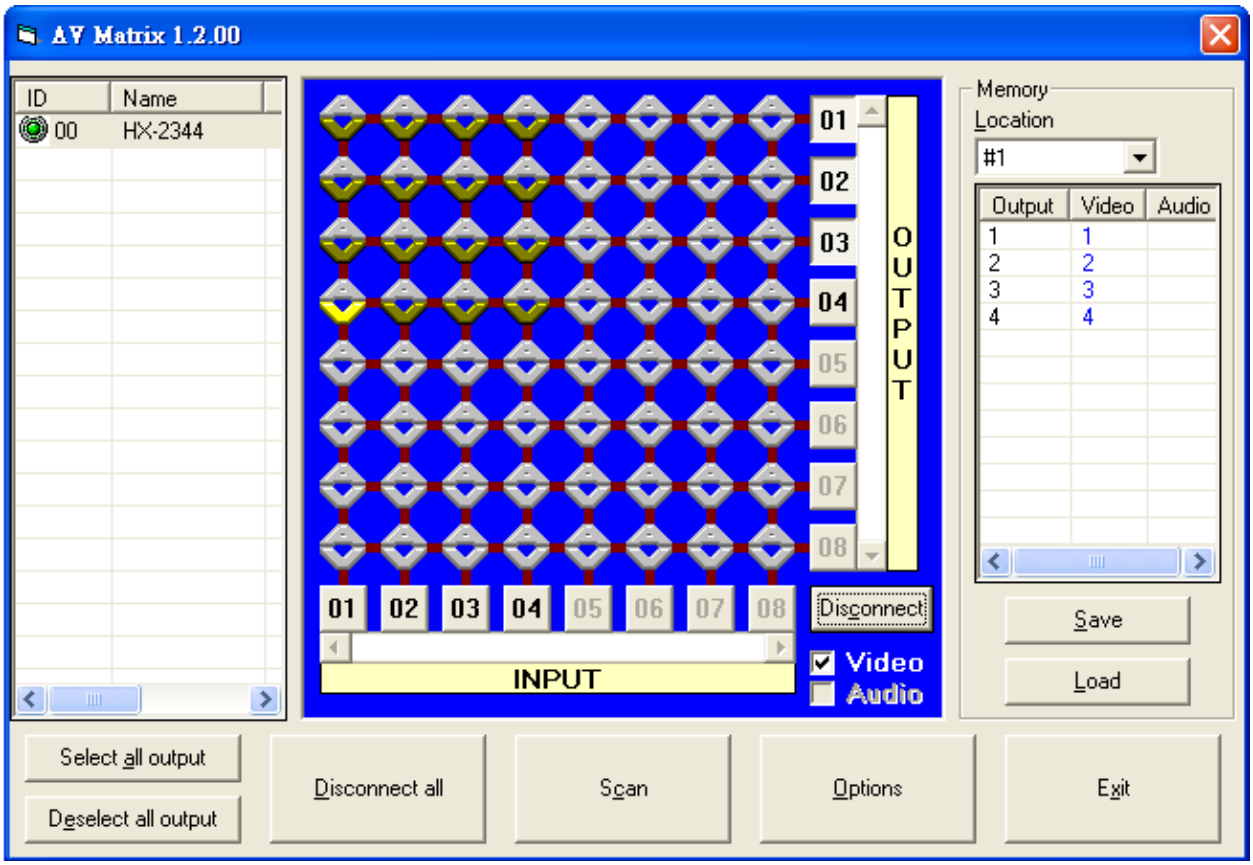


Figure 6-3

6.0.2.3 Select all output, DeSelect all output Switching Functions

（1）**Select all output Function Description:** You can use this function to select one all output ports for output to one input port.

A specific example of operation is described below:

Example: Now, you have an HX-2344 matrix with all input and output ports properly connected to the equipments. The needed input/output ports should be set to channel 1 input to all output-ports to output.

Make sure you have selected the **"Video"** check box (

). Then, press the **"Select all output"** key and select the input number key 01. Click on the matrix icons along the 01 row to transform them into to complete the command operation.

（2）**DeSelect all output Function Description:** It is used to disable the **Select all output** function.

6.0.2.4 Disconnect all Command

Function Description: To disable all the switching functions. Press the **"Disconnect all"** key to disable all the connections of input and output ports.

6.0.2.5 Memory Function

Function Description: To store and retrieve the settings.
Store Functin Description: The **Store Function** saves all the present input/output switching relations to any Locations from #1 to #4 you desired.

A specific example of the Store Function is described below:
Stores all the present input/output switching relations to Location #1. First, select Location #1, as shown in the figure below. Then click the **Save** key to save all the present input/output switching relations to Location #1.

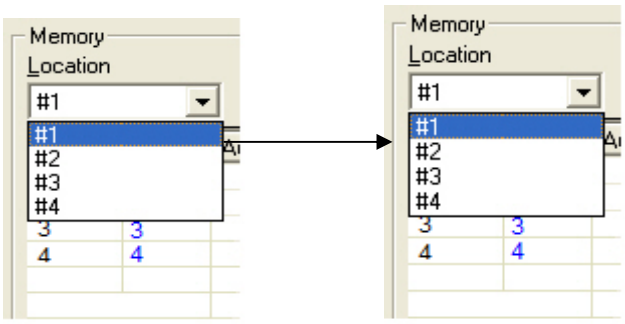


Figure 6-4

Retrieve Function Description: To retrieve the saved input/output switching relations.

A specific example of the Retrieve Function is described below:
To retrieve the input/output corresponding relations saved in Location #1. First, select Location #1 as shown in the figure below. Then click the **Load** key to retrieve all the input/output corresponding relations stored in Location #1.

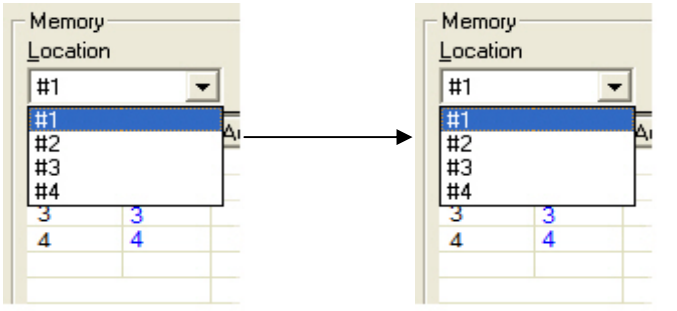


Figure 6-5

6.0.2.6 Options Function

Activation Function:

In the main configuration menu, select **Options** to prop up the **Options Window** as shown in Figure 6-6（a）

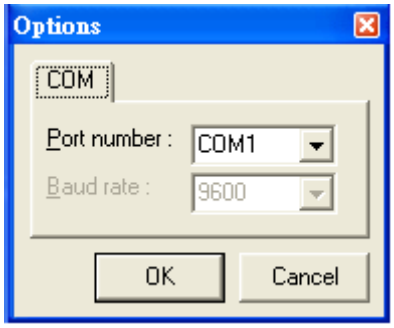


Figure 6-6（a）

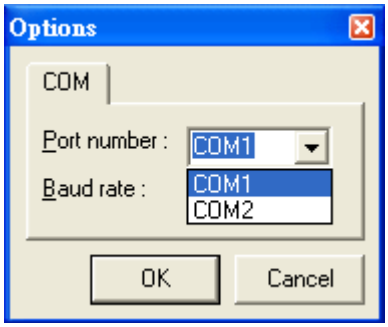


Figure 6-6（b）

Function Description:

Linking Methods: In **"Port number"** select either COM1 port or COM2 port as shown in Figure 6-6(b); in **"Baud rate"** select 9600 for signal transmission as shown in Figure 6-6（a）

6.0.2.7 Other Application

Displays the presently saved switching status as shown in Figure 6-7 below:

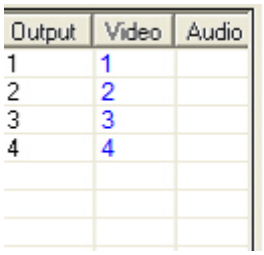
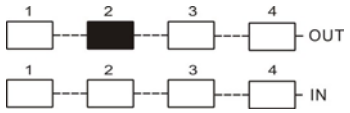
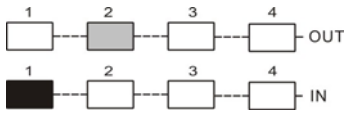
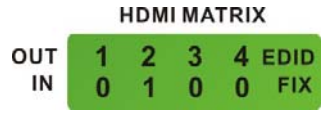


Figure 6-7

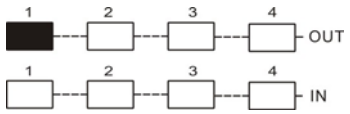
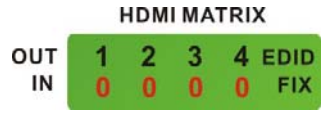
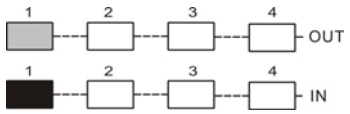
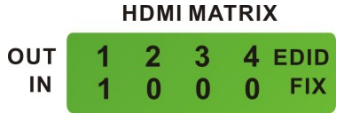
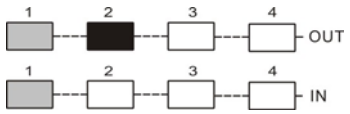
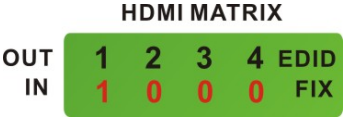
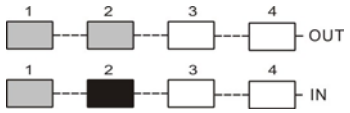
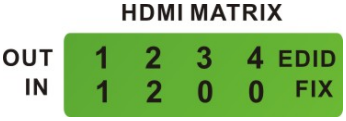
When input corresponding to Output is enabling, it shows the Output ports correspond to the Input ports; when they are disable it will show red **"None"** in the relative field.

7.0 Operation Examples

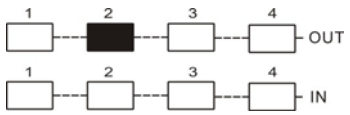
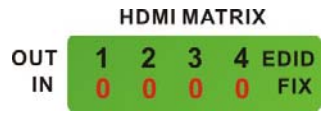
Example 1: Switch the NO.1 input signal to the NO.2 output channel.

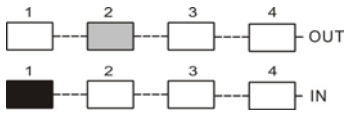
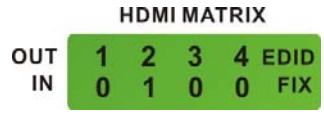
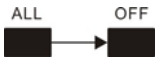
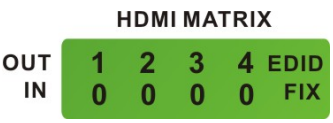
Key	LCD Display	Operation
		1. Press the NO.2 key of the output channel for 2 seconds, then the input channels will begin to flicker.
		2. Press the NO.1 key of the Input channel for 2 seconds.

Example 2: Switch the NO.1 and NO.2 input signals to each NO.1 and NO.2 output channels.

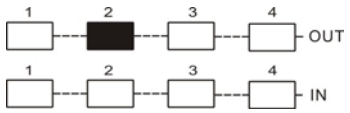
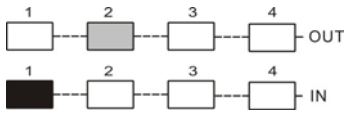
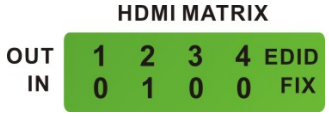
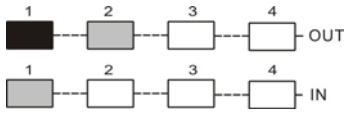
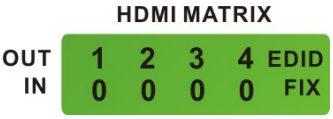
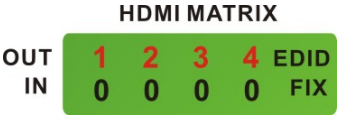
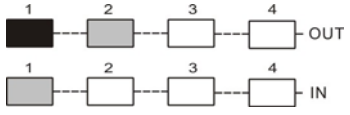
Key	LCD Display	Operation
		1. Press the NO.1 key of the output channel for 2 seconds, then the input channels will begin to flicker.
		2. Press the NO.1 key of the Input channel for 2 seconds.
		3. Press the NO.2 key of the output channel for 2 seconds, then the input channels will begin to flicker.
		4. Press the NO.2 key of the Input channel for 2 seconds.

Example 3: Delete **“All”** settings.

Key	LCD Display	Operation
		1. Press the NO.2 key of the output channel for 2 seconds, then the input channels will begin to flicker.

		2. Press the NO.1 key of the Input channel for 2 seconds.
		3. Press the **ALL** key on the front panel, and then press the **OFF** key to cancel all the settings.

Example 4: "STO" and **"RCL"** functions.

Key	LCD Display	Operation
		1. Press the NO.2 key of the output channel for 2 seconds, then the input channels will begin to flicker.
		2. Press the NO.1 key of the Input channel for 2 seconds.
		3. Press the **STO** key on the front panel, then the OUT channels will begin to flicker.
		4. Press the NO.1 key of the output channel to save the setting in the NO.1 channcel.
		5. Press the **ALL** key on the front panel, and then press the **OFF** key to cancel the setting.
		6. Press the **RCL** key on the front panel, then the OUT channels will begin to flicker.
		7. Press the NO.1 key of the output channel to Load the previously saving.

8.0 Communication Protocol/Control Command Code

Communication Protocol: Baud rate 9600bps, no odd or even calibration bit address, 8bit transmission address, 1bit stop address. Please refer to the **"Command list.pdf"** in the CD-ROM for more relative **Command Code** information.

9.0 Troubleshooting

1. What to do if the HDMI matrix front panel keys switching not responsive?

Answer: The HDMI matrix front panel keys employ scanning testing and require longer response time. Press the keys for 2 seconds and then release. This way, key switching will be responsive in operation.

2. What to do if matrix does not display or color display is abnormal after hot plug?

Answer: Switching of the matrix system goes through the IC chips. If the voltage difference between the input signal equipment and the matrix equipment is too large, hot plug could easily cause damage to the IC chips. Please turn off power to the system before plugging or unplugging.

3. What to do if loss of color reproduction happens or no video signal output?

Answer: Please check if connectors at both ends of the HDMI signal cable are correctly connected.

4. What to do if the serial port (usually refer to the computer serial port) fails to control the HDMI matrix?

Answer: Check that the communication port set by the control software is correctly connected to the corresponding serial port of the equipment. Also, check if the computer communication port is in good order.

5. What to do if the corresponding graphics fail to output during HDMI matrix switching?

Answer:

(1) Check if there is signal on the input end. If there is no input signal, it could be that the input connection cable is broken or the connector gets loosen. You are advised to replace the connection cable.

(2) Check if there is signal on the output end. If there is no output signal, it could be that the cable is broken or the connector gets loosen. You are advised to replace the connection cable.

(3) Check if the output port number is the same as the controlled port number.

(4) If none of the above circumstances happen, it could be internal failure of the product itself. You must send for repair by qualified technical engineers.

6. What to do if you sense the power leakage during plugging or unplugging of the input/output ports?

Answer: It could be that the equipment power is not properly grounded. You must properly ground your equipment; otherwise product life can easily be shortened.

7. What to do if the LCD displays normally and the communication port has return code but no image output?

Answer:

(1) It could be that the output/input connectors got loosen. Simply replace the connectors.

(2) It could be the connection cable short-circuited. Simply replace the cable.

(3) It could be the connection cable is broken. Simply replace the cable.

8. What to do if the HDMI matrix panel keys and communication ports are out of order?

Answer: Check if the equipment power input is in good contact and the computer communication ports are in good order. If yes, it could be some internal failure of the product, please send for repair by qualified technical engineer.

9. What to do if operation and function failure occurred?

Answer: Check if the equipment and the matrix system are in proper connection. If the problem persists, send the product to the maintenance center for repair.